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Urban Climate Adaptation and the Reshaping of State-Society Relations: The Politics of Community Knowledge and Mobilization in Indore, India

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Abstract: Current research on climate change adaptation in cities highlights the role of local governments in facilitating adaptation actions, but rarely assesses whether (and if so, how) local communities organize around emerging climate priorities to affect political change. This paper explores changing state-society relationships through the reconstitution of community collectives and advocacy organizations for advancing climate change adaptation in the Indian city of Indore. The paper shows that communities are indeed recognizing the need for adaptation but are, at the same time, integrating adaptation actions with existing strategies for advocating development rights. Communities are also rebuilding alliances between municipal and local institutions for public service and infrastructure provision, which point to the centrality of community politics in urban climate adaptation processes. However, such mobilizations are often dependent on existing political networks and a legacy of advocacy around poverty alleviation needs, which sideline more transformative agendas around inclusiveness, equity, and resilient urban futures.

Keywords: Climate change adaptation, urban governance, community knowledge, state-society relations, innovations, urban planning

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Introduction

Cities across the global South are increasingly arenas in which emerging climate change priorities interact with urban development discourses to produce grounded adaptation and resilience outcomes. Local governments are taking ownership over the content of climate adaptation plans and strategies (Anguelovski, Chu, & Carmin, 2014), many of which focus on institutionalizing adaptation actions into municipal sectoral agendas (Anguelovski & Carmin, 2011; Pasquini et al., 2015), uncovering pathways for inclusive and participatory planning (Archer et al., 2014; Chu, Anguelovski, & Carmin, 2016; Moser & Ekstrom, 2011), and designing robust governance arrangements to account for future climate risks and uncertainties (Hughes & Romero-Lankao, 2014; Hunt & Watkiss, 2011).

Despite these advances, many cities continue to be criticized for not doing enough to protect the interests of vulnerable and marginalized communities, especially since economic growth paradigms continue to dominate many climate change agendas in the global South (Shi et al., 2016). The critique is that cities are simply repackaging emerging climate adaptation or “resilience” mandates to further capital accumulation, investment, and speculative growth opportunities, thus marginalizing the intended beneficiaries of adaptation interventions (Anguelovski et al., 2016; Sovacool, Linnér, & Goodsite, 2015; Whitehead, 2013). Although the literature on community-based adaptation argues that adaptation actions will be more equitable and effective if planning responsibilities are devolved to communities (Ayers & Forsyth, 2009; Forsyth, 2013), many of these theories are cast as directly in contrast to those driven by city governments or public-private partnerships. Such community-based theories therefore fail to capture the idiosyncrasies of how governance happens in cities, and how communities can mobilize to affect political change. So given the two contending approaches to theorizing urban climate adaptation action – one that is “top down” and another that is “bottom up” – is it conceivable that there may be an alternative, more diffuse model that does not cast the state and civil society as dichotomous actors? If so, what does this model look like and how are different climate and development interests accounted for, contested, and ultimately realized on the ground?

In this paper, I critique current understandings of urban climate adaptation by providing an alternative, “third way” explanation of how emerging adaptation objectives are recasting state-society relationships in cities. Through a case study of Indore in India, I argue that due to uncertainties associated with policy authority, finance, and knowledge, climate adaptation is neither a “top-down” nor “bottom-up” process, but instead should be considered as an interaction between the municipality and the community. To showcase this, I draw on theories of urban politics, social movements, and governance innovations to assess Indore’s experience with addressing climate risks and impacts. I note that Indore’s approach is a product of reframing climate adaptation needs that are nested in

preexisting development interests and, in turn, supported by preexisting knowledge institutions. Through the rebuilding of state-society alliances, urban adaptation becomes a dialectical process in which local interests are reconstituted, knowledge is reshaped, and where potential interventions are co-produced. However, at a more nuanced level, this theoretical contribution also points to emerging critiques on the growing influence of local mobilizations in response to climate impacts. The renewed focus on micro-level political interactions is, in fact, uncovering different distributive implications about the role of disconnected community mobilizations, the influence of elite interests, and the overall ability of embedded governance practices to facilitate truly climate resilient urban futures.

Climate Adaptation through the State-Society Lens

Current scenarios of climate change show decreasing precipitation levels, increasing urban heat, and more unpredictable extreme events for much of the global South (IPCC, 2014). In response, there has been a proliferation of policies and plans to adapt to these impacts across cities, ranging from community-based water conservation strategies to trans-boundary infrastructures to protect against storm surges and sea level rise (Chu, Anguelovski, & Roberts, 2017; Pahl-Wostl, Gupta, & Petry, 2008). This section builds on emerging mandates for adaptation in cities, and reviews theories of urban governance, state-society relations, and the role of innovation for bridging governance deficits in the global South.

Adaptation strategies are often more effective if implemented in cities because they oversee responsibilities for managing infrastructure and public services (Dodman & Satterthwaite, 2009; Rosenzweig et al., 2010; While & Whitehead, 2013). In the global South, even though trends in democratization meant that cities were increasingly beneficiaries of devolved budgetary, legislative, and infrastructural powers, many continued to be hamstrung by capacity deficits that were symptomatic of the post-colonial condition (Robinson, 2011; Roy, 2011; Watson, 2009). Furthermore, cities were becoming sites of capital accumulation, contentious politics, and the spatial manifestations of the interaction between the two (Brenner & Theodore, 2005). Under these circumstances, scholars began to interrogate the role of social movements and their abilities to advocate for economic and political rights (see Amin & Thrift, 2002; Castells, 1983). The argument is that through restructuring state-society relationships in ways that mediate the influence of capital or entrenched political economic regimes, citizens would be able to combat current economic inequities or even redress past developmental injustices (Harvey, 2003; Marcuse, 2009; Migdal, 2001).

Contemporary climate change discourses therefore arose from this backdrop of concentrated power amongst small numbers of urban economic elites, structural biases towards decentralized network governance approaches, and a persistent unraveling of public sector planning and decision-

making authorities (Himley, 2008; Swyngedouw, 2004). To overcome these deficits, cities pursued cost-effective strategies of integrating adaptation into existing urban development, poverty reduction, disaster management, and resources conservation agendas (Carmin, Dodman, & Chu, 2013; Huq & Reid, 2004; Sharma & Tomar, 2010; Shi, Chu, & Carmin, 2016). Many of these strategies drew upon theories of co-production, which make an explicit effort to bring together analyses of state-society relationships with practices that further environmental and developmental rights (McFarlane, 2012; Mitlin, 2008)

Still, due to uncertainties associated with different approaches, processes of experimentation and innovation continue to characterize the ways in which cities engage with adaptation on the ground (Anguelovski et al., 2014; Bulkeley & Castán Broto, 2013; Carmin, Anguelovski, & Roberts, 2012). In many cases, the effectiveness of strategies is dependent on local participation (Archer et al., 2014; Chu et al., 2016; Moser & Ekstrom, 2011), as climate impacts are ultimately interwoven with specific local vulnerabilities (Dodman & Mitlin, 2011; Friend & Moench, 2013; Nay et al., 2014). Although cities recognize that community actors play a key role in ensuring the legitimacy of policy actions, such participatory processes do not always lead to more inclusive outcomes (Cooke & Kothari, 2001; Few, Brown, & Tompkins, 2007; Lane & Corbett, 2005; Swyngedouw, 2005; Taylor, 2007). For example, participation can be seen as an item on donor checklists rather than as genuine social learning processes that build local awareness and capacities (Collins & Ison, 2009; Ensor & Harvey, 2015). Furthermore, powerful development interests may end up subsuming local needs while continuing patterns of extraction, pollution, and displacement (Shi et al., 2016). This is particularly problematic because poor groups bring fewer resources to prepare for, cope with, and recover from climate impacts.

In response, the growing scholarship on community-based adaptation argues that improvements in local adaptive capacity can be tied to efforts to redress development inequalities (Chu, 2016a; Ensor & Berger, 2009; Forsyth, 2013; Rodima-Taylor, Olwig, & Chhetri, 2012). Drawing heavily on theories of community resilience (Berkes & Ross, 2013; Cutter, Ash, & Emrich, 2014), social capital (Adger, 2009; Pelling & High, 2005), as well as community-based resources management (Brosius, Tsing, & Zerner, 1998; Kellert et al., 2000), examples of community-based adaptation include the formation of community water collectives, microcredit groups, and the strengthening of social safety nets (Ayers & Forsyth, 2009; Magee, 2013; Reid & Huq, 2014). These strategies speak to opportunities to address differing structural and institutional capacities to adapt to climate impacts (Barrett, 2013; Bulkeley, Edwards, & Fuller, 2014; Parks & Roberts, 2010). Still, few authors have made an explicit link between community-based adaptation and municipal climate change governance, and therefore have not articulated the pathways through which such local strategies can be mobilized to affect institutional change at the city-level.

To address this gap in knowledge, this paper examines Indore's experience with climate adaptation and highlights the role of community knowledge in spurring governance innovations that take into account the development needs of the urban poor. Here, innovations are defined as processes that facilitate social learning and policy development through the creative reconstitution of state-society relationships and institutional functions (Fung & Wright, 2003; Healey, 2004; Moore & Hartley, 2008). In India, even though early policies focused on issues of poverty alleviation, governance reform, economic growth, and environmental quality (Fisher, 2012; Thaker & Leiserowitz, 2014), cities have more recently started to recognize issues of justice and equity as part of their climate adaptation efforts (Bulkeley et al., 2013; Paavola & Adger, 2006). In this context, governance innovations can help address issues of climate injustice by bridging state-society deficits (Aylett, 2013; González & Healey, 2005). The experiences from Indore, therefore, serve as an important example of interactive politics at the community level, and demonstrate how existing theories of state-society relations can be rescaled and applied to analyze emerging climate adaptation actions in cities.

Methodology

This paper presents a case study of Indore to showcase how urban climate adaptation policies shape (and in turn reshaped by) local knowledge used to redress urban developmental inequalities. Indore, a drought-prone city of over 2.2 million in the central state of Madhya Pradesh, was a pilot city for the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN) between 2009 and 2015, and is an early adopter of water governance strategies that target climate adaptation needs. Drawing on 30 semi-structured interviews conducted between 2013 and 2015 as well as document analysis methodologies, this paper charts the history of how urban poor communities are mobilizing to protect their water rights in the context of climate change. Interviews were directed at city decision-makers and notable community leaders championing climate awareness in their neighborhoods, and asked about the different motivations, incentives, and strategies to sustain adaptation interventions. This paper also highlights examples of water governance innovations in the community of Rahul Gandhinagar, which is a legally-designated slum settlement of about five thousand residents in the south of the city. Most residents of Rahul Gandhinagar lack formal land tenure and live without access to municipal water and sewage pipelines. The community is highly vulnerable to water scarcity during dry seasons and waterlogging during monsoon seasons.

Through building a historical narrative that is supported by illustrative quotes from NGOs representatives, community leaders, engineers and planners, and external funders, this paper illustrates the reconstitution of political and knowledge networks between municipal and community actors, which in turn facilitate the integration of community water needs with emerging climate

adaptation priorities. Drawing on theories of state-society relations, the case study shows that the role of urban authorities in adaptation is not based on the centrality of policymaking, but is based on its role in creating a knowledge-based political infrastructure that is synergistic to the adaptation priorities of the urban poor. From there, I offer some synthetic critiques of the uncertainties surrounding the degree to which disconnected forms of community mobilization can facilitate larger, more transformative visions of urban climate resilience.

Community Knowledge and Mobilization for Adaptation in Indore

Approximately 27% of Indore's population lives in the 599 designated slum settlements that lack access to public water supply and distribution infrastructures. Spread across the city's 69 wards, these slums are also at the forefront of climate impacts, which include water scarcity, urban heat, and waterlogging. Between 2009 and 2015, Indore was a pilot city for the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN), which was a US\$59 million initiative to build climate resilience in different cities across Asia. This section situates Indore's experience by providing a brief historical account of the different development policies supported by national and multilateral agencies, the growing role of ACCCRN in combining water and adaptation priorities, and the subsequent infrastructural interventions at the community level.

Early Climate and Development Efforts

Indore has been a recipient of different sources of international and multilateral development aid since in the 1980s. An early example of this was the Indore Habitat Improvement Project, which ran from 1990 to 1997 and had a budget of approximately US\$15 million supplied by the UK Department for International Development (DFID). The project supported the construction of roads, housing up-gradation in low-income communities, extension of sewage pipelines and water treatment facilities, and other infrastructure improvement projects (Verma, 2000). The community development component, in particular, included the facilitation of neighborhood groups, vocational training collectives (especially for women), adult literacy, pre-school, and non-formal education programs (Verma, 2000).

During the 1990s and 2000s, Indore further received support from different national or state-led urban poverty alleviation programs. For example, launched in 1997, the *Swarna Jayanti Shahari Rozgar Yojana* supported different credit assistance programs for micro-enterprises and household savings groups. Similarly, again in partnership with DFID, the Madhya Pradesh Urban Services for the Poor Program (2006 to 2012) and the subsequent Madhya Pradesh Urban Infrastructure Investment Program (2013 to 2015) both targeted equitable access to basic water and sanitation

infrastructure, specifically among women and children from low-income neighborhoods. Many of these infrastructure upgrading and poverty reduction priorities were integrated into the *Indore City Development Plan* (2006), which were then financed by Jawaharlal Nehru National Urban Renewal Mission (JNNURM). Finally, in 2011, the *Rajiv Awas Yojana* program further built on these development projects to support the rehabilitation of slum settlements and to provide water rights to urban poor residents (Government of India, 2013).

Over the past several decades, rapid urbanization in Indore not only necessitated the rise of these different urban development and poverty alleviation programs, but it also prompted the articulation of environmental and climate change priorities as part of the city's larger urban development profile. In particular, as nearly 80% of Indore's water supply is sourced from the Narmada River located 70 kilometers away (UN-Habitat, 2006), water accessibility and distribution are the city's most critical environmental stressors (Dipak & Arti, 2011). Low-income communities in Indore are largely located along creeks and are prone to flooding, waterlogging, and vector-borne diseases (Indore City Resilience Strategy, 2012). Furthermore, the rapid pace of urban growth has accelerated the loss of green space and contributed to general environmental degradation, high rates of waste generation, and deficits in public services provision (Gupta et al., 2006).

As emerging climate change priorities were converging with larger urban development needs, in 2009, Indore partnered with the Rockefeller Foundation to address climate impacts across all urban economic and social sectors. Indore's experience represents a broader trend in India, where different transnational institutions are increasingly supporting climate change programs that bridge sectoral divides between infrastructure, water and sanitation, and resource conservation, as well as connect decision-making across local, state, and national levels of government (Anguelovski et al., 2014; Chu, 2016b; Sharma & Tomar, 2010). Though climate priorities have since gained a foothold at the national ministerial level, policies articulated at the state and regional levels have rarely moved beyond rhetoric. As a result, cities became an important testing ground for nascent climate adaptation plans and projects.

Emerging Local Knowledge of Adaptation

Starting in 2010 – and with ACCCRN support – Indore embarked upon a comprehensive urban climate resilience assessment process and implemented pilot projects focused on increasing community knowledge of climate impacts, finding more effective water resource management approaches, and building new local water supply infrastructures in slum communities (Chu, 2015; Karanth & Archer, 2014). The Rockefeller Foundation's local implementation agency, TARU-Leading Edge, was charged with organizing public meetings, working groups, and scientific

assessments to quantify climate vulnerabilities and risks (Indore City Resilience Strategy, 2012). These processes involved different municipal officials, technical consultants, NGO leaders, and community representatives, and culminated in the publication of the *Indore City Resilience Strategy* in 2012. The document identified water, public health, and slum settlements as the sectors most vulnerable to climate impacts.

Since Indore has a long history of engagement with external agents, many of the proposed adaptation interventions built upon preexisting capacities of local actors and institutions for implementation. Most adaptation interventions in Indore have also focused on the issue of water scarcity, which exerts additional stressors on the urban poor's ability to access reliable freshwater wells and pipelines. As one municipal engineer remarked:

“Indore has the costliest water management system [in India]; operation and maintenance of the system is very expensive. For all the projects, community involvement is very important. Communities are the main stakeholders in our projects. In Indore, all the projects are related to ground-level implementation; so community-level is very important” (Interview 2014).

Even though the municipal authority acknowledges the role of local actors in supporting adaptation priorities, these initiatives were often constrained by low awareness and financial deficits (Interview 2013). To bridge these gaps, TARU-Leading Edge partnered with different community-based organizations to jointly implement adaptation projects (Karanth & Archer, 2014). These projects all focused on poverty alleviation in slum neighborhoods, with a particular priority placed on experimenting with decentralized water harvesting and wastewater management technologies. As a result, preexisting community institutions – especially those that were historically charged with advocating for development rights – were slowly reconstituted in response to the rising knowledge of climate impacts (Chu, 2016a).

One notable case is the community of Rahul Gandhinagar, where most residents lack access to piped drinking water and where ACCCRN partners constructed a reverse osmosis facility with a daily capacity to treat 7,000 liters of groundwater and gray-water. Since the facility's inauguration in March 2013, it has helped to improve the overall reliability of drinking water supply and reduced gastrointestinal disease infection rates within the community, particularly during extreme climate events (Interview 2013). However, the reverse osmosis plant is not a completely novel intervention in Rahul Gandhinagar, but is, in fact, a culmination of many years of water supply management interventions in the community. For instance, in 2006, a partnership between Madhya Pradesh Urban Services for the Poor (which was partly funded by DFID) and the Asian Development Bank's Project

Uday programs first distributed water testing kits in Rahul Gandhinagar in response to high levels of fecal matter detected in the drinking water (Interview 2014). More recent adaptation actions such as the reverse osmosis facility, therefore, build on these earlier community water and development interventions.

The daily operations and management of the reverse osmosis facility in Rahul Gandhinagar relies on community groups for knowledge dissemination, legitimacy, and financial accountability. In this case, the *basti vikas samiti* (slum development committee), which is composed of 26 women representatives from across the community, is charged with championing the benefits of the facility and raising general awareness of climate vulnerabilities. Originally created as a community collective to catalyze public health and microfinance projects funded by DFID and the Asian Development Bank in the early 2000s, the *basti vikas samiti*'s role has since been expanded to include overseeing the reverse osmosis facility due to the group's previous experience with financial and personnel management. One group member remarked:

“There is a community leader... That lady manages the entire water source and she was given some amount [of money] from the community – like twenty rupees or ten rupees from house to house – to manage the existing water source. That lady and some other ladies are also managing this water and [the] reverse osmosis plant” (Interview 2013).

Furthermore, each *basti vikas samiti* member is responsible for conducting household and group meetings within their neighborhood to raise awareness of the health benefits of reverse osmosis-treated water. The women are motivated by reputational gains rather than financial benefits. As one group member described:

“Climate change is a very big word for the communities. Many are not literate, but they are facing climate change in their day-to-day life. With our help, people are beginning to use the word climate change – ‘*global warming ho rahi hai, paani zyada girta hai* (global warming is happening, rain is increasing).’ So they are saying that climate change is happening and is multiplying their problems. Awareness is increasing day-by-day” (Interview 2013).

Therefore, one major impact of the *basti vikas samiti* is the reconstitution of necessary knowledge and political networks to facilitate awareness of climate change on the local water supply. The success of the reverse osmosis facility ultimately relies on the legitimacy of the women's group itself in championing the collective water management interests of the community – a role that is bolstered by the group's prior experience in interacting with external and multilateral donors. Under climate

change, the *basti vikas samiti* has charted a new mandate of facilitating actions at the nexus of adaptation and development.

Finally, several local NGOs are supporting the ongoing work of community groups such as the *basti vikas samiti*. In the case of Rahul Gandhinagar, the Association for the Advancement of Society (AAS) has been working in the community for the past fifteen years, and has been instrumental in different community development programs (Interview 2014). In partnership with the *basti vikas samiti*, the AAS has not only conducted additional education campaigns, but has also facilitated new coalitions and networks between community and municipal actors to help implement adaptation interventions. As one AAS staff member noted:

“[We] are going to our communities to mobilize more people, to advocate for the reverse osmosis water. [O]ur basic role is implementation in the community, like awareness generation, discussing with community members, training and capacity building, and liaising with the municipal government” (Interview 2014).

The role of AAS, therefore, entails juxtaposing the community’s experiential knowledge of changing environmental conditions against their own development priorities. The residents of Rahul Gandhinagar are increasingly realizing climate impacts, particular in terms of their water access and supply. So in response, the *basti vikas samiti* and other community actors have banded together to advance adaptation actions that not only remedy specific climate impacts, but also build on institutions, programs, and networks that were created as a result of previous engagements with urban development interventions. These reconstituted community mobilizations are articulating new framings of politics at the nexus of climate and development, reestablishing old knowledge networks, and, as the next section will highlight, catalyzing further strategies for engaging with municipal authorities.

Reshaping Municipal Actions

Throughout its experience with climate adaptation, the Indore Municipal Corporation has actually not directly financed interventions in the city, even though much of this can be attributed to the city’s own lack of governance capacity. For example, the municipal water department only indirectly supported the reverse osmosis facility through providing free connections to public services and subsidizing water rates (Interview 2014). Despite this, some awareness of climate impacts has begun to permeate into urban policies. As one AAS member noted, experiences from Rahul Gandhinagar have informed changes within the local government itself:

“The municipality is starting to talk about issues of water because we have gotten success in Rahul Gandhinagar. So now people are interested in replicating this model in other areas. In fact, the leadership is very happy with the reverse osmosis plant, and in every speech they raise this issue... So adaptation is being discussed in a public forum” (Interview 2013).

Encouraged by these successes, the city government is taking a more active role in linking urban water management priorities with climate adaptation needs. For example, adequate storm water drainage has become a priority for new road development, while conserving green spaces and promoting grey water reutilization and treatment programs are featured in the revisions of the *City Development Plan* after 2014 (Interview 2014).

Many of these city-led efforts rely on local actors for legitimacy and implementation support. Notably, the municipality and ACCCRN partners embarked on a project to conserve and rehabilitate four urban lakes that were degraded due to pollution and soil erosion (ACCCRN, 2013; Chu, 2016a). The project started with several biodiversity and household socioeconomic surveys, which then informed a water management plan as well as different studies on the construction of community sewage treatment facilities. Various ward committees and different *rehwasi sangh* (resident welfare associations) also supported these decentralized efforts. As one association member remarked:

“Only community members cannot work and only city government will not be helpful. We have to build the capacity of the city government and we have to orient the community through generating knowledge – then combine the two. The community is the first responder and the community will suffer, [but] the city government may not suffer. So there needs to be close coordination between city government and the community. There should not be a gap, one cannot work single-handedly” (Interview 2014).

Similar to the *basti vikas samiti*, the role of the *rehwasi sangh* is not only to provide community legitimacy and experiential knowledge to the adaptation planning process, but is also to ensure interaction between community beneficiaries, the city, and the different local water management utilities. This creates knowledge intermediaries between municipal and community actors that mimic historic pathways of community development interventions, but which are now reconstituted according to emerging adaptation priorities. In this case, the municipality is seizing and reproducing locally powerful political networks and implementing projects through strategic alliances with existing community groups.

Such strong community advocacy networks have also catalyzed changes in municipal policies. For example, to reduce stress on the public water infrastructure during extreme climate events, the city now provides a 6.25% property tax rebate for each household that installs a water harvesting system (Interview 2013). The municipality also provides technical support for evaluating appropriate technologies and staffing support for installing such systems. Furthermore, the municipality has introduced a budget line item entitled “climate change safety expenses” that earmarks 500,000 rupees – approximately US\$9,000 – each year for climate-related activities such as replicating different community-level pilot projects.

In summary, the previous sections have shown that one must have a renewed understanding of urban climate adaptation based on an interactive relationship between the municipality and the community, rather than one-way “top-down” or “bottom-up” conceptions. Through the lens of state-society relations, municipal versus local politics is no longer the most meaningful division in theorizing how adaptation is governed in cities. Rather, adaptation is a product of reconstituting and reframing local political networks in response to emerging adaptation priorities, which then creates a robust knowledge-based infrastructure that reasserts the role of community actors in directing resources, implementing interventions, and sustaining engagement processes.

Climate Change and the Reshaping of State-Society Relationships: Emerging Critiques

This paper began by identifying a gap in our understanding of how urban climate adaptation programs shape (and are reshaped by) local knowledge of climate impacts and development needs. This section offers some critical observations on the role of community knowledge in facilitating innovation and mobilization in this context. As an immediate contribution to the literature, I have illustrated how emerging adaptation priorities can engage local institutions and their varying roles in framing agendas, integrating development strategies, and mobilizing for influence within local government. I argue that climate adaptation actions are operationalized through readily accessible community knowledge, political networks, and governance innovations that are perceived to have a legacy of success. However, at a more nuanced level, this theoretical contribution also raises a series of more fundamental questions. In particular, although it has facilitated a renewed focus on micro-level political interactions, this process of reshaping state-society relationships also points to the distributive implications of disconnected mobilizations, the influence of elite interests, and the overall ability of embedded governance practices to catalyze truly climate resilient urban futures.

Critique of Disconnected Mobilization

The reality in Indore is that many vulnerable communities are already actively protecting resources and livelihood needs against climate change impacts. These communities are doing so by rebuilding alliances with public sector actors, therefore I have argued for reasserting the role of community politics in theorizing how the cities facilitate adaptation outcomes on the ground. However, one must also reconcile theories of state-society relations against an analysis of the degree to which adaptation decision-making processes are representative and legitimate. In Indore, despite the importance of community organizations in leading adaptation strategies around key development priorities, the underlying social and political legitimacy of such targeted advocacy approaches is unclear. The question of who has power over the process is critical because it ultimately affects the shape and context upon which climate change priorities enter the public consciousness.

In Indore, even though local NGOs such as AAS have partnered with both community-level actors – like the *basti vikas samiti* and *rehwasi sangh* – as well as ACCCRN partners within the municipality to promote awareness of climate impacts on the city’s water resources, such decentralized and discrete efforts often only succeed because they are relatable, easy, and cheap to implement. As one community organizer noted:

“We have identified some technologies and have conducted focus group discussions and shared [with them] which technologies would be for the community. Where the community cohesion is very high and the leadership is good, we have promoted interventions like the reverse osmosis facility. Where the capacity is limited, we have identified individual technologies, like storage tanks water harvesting in individual houses” (Interview 2013).

So in communities like Rahul Gandhinagar where there are strong and legitimate social institutions like the *basti vikas samiti*, extant decision-making capacities can be redirected to implement larger-scale adaptation strategies such as the reverse osmosis facility. These capacities are derived from utilizing institutional structures that were created from working with external donors in the past. The AAS and *rehwasi sangh* were also preexisting organizations that had the capacity to absorb emerging adaptation priorities perceived to be in line with their institutional objectives and interests.

Even though planning processes that are broadly inclusive are important, their success will be diminished if they are not accompanied by a recognition that mobilizing equitable outcomes is equally critical (Hughes, 2013; Meerow & Newell, 2016; Shi et al., 2016). In other words, emerging adaptation efforts must also address the distributional implications of climate change across different urban sectors and spaces. In Indore, scientific and technical experts employed by philanthropic institutions and consulting firms based outside of the city spearheaded many of the adaptation pilot projects. As a result, even though climate concerns were ostensibly integrated into the urban

development agenda, priorities around financializing public services – such as in the case of water supply and distribution – were roundly promoted. Dominant economic and political interests continued to frame the adaptation agenda as community mobilizations were only concentrated in neighborhoods with an ACCCRN footprint, or were only successful because they built upon the legacy of interacting with development aid. In the end, the potential for these discrete adaptation interventions to redress structural urban injustices – particularly those concerning more vulnerable sections of society beyond Rahul Gandhinagar – remains unclear.

Critique of Transformative Capacity

The literature on social movements notes that mobilizations are characterized by clear linkages between actors through dense informal networks and by a distinct collective identity (Jamison, 2010; Della Porta & Diani, 1999). The goal, then, is to affect political change through mobilizing human and material resources (Jamison, 2010). These theories are often applied to urban climate change governance to evaluate whether – and if so, how – community-based strategies can transform current approaches to development as well as to articulate more inclusive decision-making processes and more equitable policy outcomes (Shi et al., 2016; Ziervogel, Cowen, & Ziniades, 2016). However, in Indore, although local NGOs and community groups play a key role in raising awareness of climate impacts on water resources, such discrete activities are unlikely to catalyze more transformative climate change actions across different communities. As one community organizer remarked:

“One thing is the vision. The community-level vision is only for their community. If we are discussing with government officials, then their vision is for the whole city. So the vision is different. If the [municipality] agrees, the projects will be replicated in other communities also. Communities only care about their communities” (Interview 2014).

Although community activists all note the importance of locally based framings of adaptation needs and ownership over adaptation options, communities that lack the knowledge and experience of groups like the *basti vikas samiti*, *rehwasi sangh*, or AAS are often unable to plan beyond the community scale. As a result, many adaptation projects often rely on continuous capacity assistance from external actors such as the Rockefeller Foundation and DFID.

Despite Indore’s focus on articulating community-level strategic actions – which point to clear poverty reduction implications – there is no vision to build upon (or “scale-up”) these incremental projects to facilitate more inclusive development across the city. This therefore runs counter to recent scholarship on justice and inclusion in climate adaptation (see Chu et al., 2017; Shi et al., 2016; Sovacool et al., 2015), where the focus has shifted to assessing how adaptation actions

can promote more transformative approaches to urban development (Anguelovski et al., 2016; Bahadur & Tanner, 2014; Pelling, O'Brien, & Matyas, 2015). In contrast, where there are institutional constraints to replicating community projects, there exists a gap between local advocacy and genuine improvements to structural inequality experienced by poor residents. Powerful urban residents may end up reaping adaptation benefits at the expense of marginalized communities that are already vulnerable to climate impacts.

Finally, the literature notes that the decentralization of decision-making in cities has led to a proliferation of arenas for public participation and deliberation, especially for addressing scientific complexity and uncertainty (Fung, 2006; Innes & Booher, 2010). However this political restructuring has uncovered more fundamental questions about who has control over the strategies and outcomes of urban climate change adaptation. The main barriers highlighted in this section – the lack of effective institutional structures to sustain discrete community-level mobilizations and the unequal distribution of transformative capacities between urban poor communities – are serious constraints that limit the sustainability and inclusivity of adaptation interventions going forth. The danger is that adaptation benefits may get co-opted by elite interests or that the poorest residents will ultimately be left behind. In other words, although community mobilizations may bring forth innovative governance approaches to respond to climate impacts, these mobilizations – if conceived discretely to target only particular sectoral development challenges – may also run the risk of entrenching overall urban vulnerabilities.

Conclusion

This paper argues that local communities have not only started to recognize the need for adapting to climate impacts, they are also actively fusing their adaptation goals with historic mobilizations against developmental injustices. I have shown that climate adaptation is neither a “top-down” nor “bottom-up” process, but instead should be considered as an interaction between the municipality and the community. This alternative “third way” model more adequately captures changing state-society relationships when cities are confronted with uncertain climate change impacts, risks, and vulnerabilities. These interactions between the municipality and the community then catalyze governance innovations that reassert the role of community knowledge in how the municipality frames and implements adaptation projects on the ground. Indore is not unique in this case – such changing relationships mirror those attributed to broader dynamics of governance decentralization and political mobilization in the global South, where cities are becoming key arenas in which to contest local knowledge, rebuild political alliances, and co-produce policy and planning outcomes.

Even though Indore has had some success in spurring projects that are in line with both development and adaptation needs of the poor, future research must also try to understand how these discrete gains set the stage for more structural transformations in urban climate governance (Bahadur & Tanner, 2014; O'Brien, 2011; Pelling et al., 2015; Roggema, Vermeend, & Dobbelsteen, 2012). Specifically, how can state-society theories be channeled to affect more just distributions of adaptation benefits as well as promote more resilient urban transformations? As climate impacts become more pronounced, municipal authorities in the global South must focus on creating a knowledge-based political infrastructure that places community representativeness, knowledge, rights, and legitimacy at the center. This way, the critiques leveled against Indore – namely the role of disconnected community mobilizations, the influence of elite interests, and the overall inability of embedded governance practices to facilitate true climate resilience – can be overcome. Even though external actors such as the Rockefeller Foundation come and go, this will ensure that community experiences and collective memories are carried forward to bridge future gaps in experimentation, knowledge sharing, and transformative climate action.

References

- ACCCRN. (2013). *ACCCRN City Projects: Asian Cities Climate Change Resilience Network*. May 2013. Bangkok, Thailand: Asian Cities Climate Change Resilience Network (ACCCRN); The Rockefeller Foundation, Asia Office.
- Adger, W. N. (2009). Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography*, 79(4), pp. 387–404. Retrieved from <http://doi.wiley.com/10.1111/j.1944-8287.2003.tb00220.x>
- Amin, A., & Thrift, N. (2002). *Cities: Reimagining the Urban*. Cambridge: Polity Press.
- Angelovski, I., & Carmin, J. (2011). Something borrowed, everything new: innovation and institutionalization in urban climate governance. *Current Opinion in Environmental Sustainability*, 3(3), pp. 169–175. Retrieved from <http://dx.doi.org/10.1016/j.cosust.2010.12.017>
- Angelovski, I., Chu, E., & Carmin, J. (2014). Variations in approaches to urban climate adaptation: Experiences and experimentation from the global South. *Global Environmental Change*, 27, pp. 156–167. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S095937801400106X>
- Angelovski, I., Shi, L., Chu, E., Gallagher, D., Goh, K., Lamb, Z., et al. (2016). Equity Impacts of Urban Land Use Planning for Climate Adaptation: Critical Perspectives from the Global North and South. *Journal of Planning Education and Research*, 36(3), pp. 333–348. Retrieved from <http://jpe.sagepub.com/cgi/doi/10.1177/0739456X16645166>
- Archer, D., Almansi, F., DiGregorio, M., Roberts, D., Sharma, D., & Syam, D. (2014). Moving towards inclusive urban adaptation: approaches to integrating community-based adaptation to climate change at city and national scale. *Climate and Development*, 6(4), pp. 345–356. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17565529.2014.918868>
- Ayers, J., & Forsyth, T. (2009). Community-Based Adaptation to Climate Change. *Environment: Science and Policy for Sustainable Development*, 51(4), pp. 22–31. Retrieved from <http://www.tandfonline.com/doi/abs/10.3200/ENV.51.4.22-31>
- Aylett, A. (2013). The Socio-institutional Dynamics of Urban Climate Governance: A Comparative Analysis of Innovation and Change in Durban (KZN, South Africa) and Portland (OR, USA). *Urban Studies*, 50(7), pp. 1386–1402. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1177/0042098013480968>
- Bahadur, A. V., & Tanner, T. M. (2014). Transformational resilience thinking: putting people, power and politics at the heart of urban climate resilience. *Environment and Urbanization*, 26(1), pp. 200–214. Retrieved from <http://eau.sagepub.com/cgi/doi/10.1177/0956247814522154>

- Barrett, S. (2013). Local level climate justice? Adaptation finance and vulnerability reduction. *Global Environmental Change*, 23(6), pp. 1819–1829. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0959378013001210>
- Berkes, F., & Ross, H. (2013). Community Resilience: Toward an Integrated Approach. *Society & Natural Resources*, 26(1), pp. 5–20. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/08941920.2012.736605>
- Brenner, N., & Theodore, N. (2005). Neoliberalism and the urban condition. *City*, 9(1), pp. 101–107. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/13604810500092106>
- Brosius, J. P., Tsing, A. L., & Zerner, C. (1998). Representing communities: Histories and politics of community- based natural resource management. *Society & Natural Resources*, 11(2), pp. 157–168. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/08941929809381069>
- Bulkeley, H., Carmin, J., Castán Broto, V., Edwards, G. A. S., & Fuller, S. (2013). Climate justice and global cities: Mapping the emerging discourses. *Global Environmental Change*, 23(5), pp. 914–925. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0959378013000952>
- Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*, 38, pp. 361–375. Retrieved from <http://doi.wiley.com/10.1111/j.1475-5661.2012.00535.x>
- Bulkeley, H., Edwards, G. A. S., & Fuller, S. (2014). Contesting climate justice in the city: Examining politics and practice in urban climate change experiments. *Global Environmental Change*, 25, pp. 31–40. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0959378014000120>
- Carmin, J., Anguelovski, I., & Roberts, D. (2012). Urban Climate Adaptation in the Global South: Planning in an Emerging Policy Domain. *Journal of Planning Education and Research*, 32(1), pp. 18–32. Retrieved from <http://jpe.sagepub.com/content/32/1/18.short>
- Carmin, J., Dodman, D., & Chu, E. (2013). *Urban Climate Adaptation and Leadership: From Conceptual Understanding to Practical Action*. Paris, France: Organisation for Economic Co-operation and Development (OECD).
- Castells, M. (1983). *The City and the Grassroots: A Cross-Cultural Theory of Urban Social Movements*. Berkeley, CA: University of California Press.
- Chu, E. (2015). Urban Development and Climate Adaptation: Implications for Policymaking and Governance in Indian Cities, in: A. Garland (Ed.), *Urban Opportunities: Perspectives on Climate Change, Resilience, Inclusion, and the Informal Economy*, pp. 6–29. Washington, DC: The Woodrow Wilson Center Press.

- Chu, E. (2016a). Mobilising Adaptation: Community Knowledge and Urban Governance Innovations in Indore, India, in: M. Roy, S. Cawood, M. Hordijk, & M. Hulme (Eds.), *Urban Poverty and Climate Change: Life in the Slums of Asia, Africa and Latin America*, pp. 238–254. London and New York: Routledge.
- Chu, E. (2016b). The political economy of urban climate adaptation and development planning in Surat, India. *Environment and Planning C: Government and Policy*, 34(2), pp. 281–298. Retrieved from <http://epc.sagepub.com/lookup/doi/10.1177/0263774X15614174>
- Chu, E., Anguelovski, I., & Carmin, J. (2016). Inclusive approaches to urban climate adaptation planning and implementation in the Global South. *Climate Policy*, 16(3), pp. 372–392. Retrieved from <http://www.tandfonline.com/doi/full/10.1080/14693062.2015.1019822>
- Chu, E., Anguelovski, I., & Roberts, D. (2017). Climate adaptation as strategic urbanism: assessing opportunities and uncertainties for equity and inclusive development in cities. *Cities*, 60, pp. 378–387. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0264275116301081>
- Collins, K., & Ison, R. (2009). Jumping off Arnstein's Ladder: Social Learning as a New Policy Paradigm for Climate Change Adaptation. *Environmental Policy and Governance*, 19(6), pp. 358–373. Retrieved from <http://doi.wiley.com/10.1002/eet.523>
- Cooke, B., & Kothari, U. (Eds.). (2001). *Participation: The New Tyranny?* London and New York: Zed Books.
- Cutter, S. L., Ash, K. D., & Emrich, C. T. (2014). The geographies of community disaster resilience. *Global Environmental Change*, 29, pp. 65–77. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0959378014001459>
- Dipak, S., & Arti, D. (2011). Assessment and treatment of municipal wastewater of Indore city of India. *Archives of Applied Science Research*, 3(1), pp. 450–461.
- Dodman, D., & Mitlin, D. (2011). Challenges for Community-Based Adaptation: Discovering the Potential for Transformation. *Journal of International Development*, 25(5), pp. 640–659. Retrieved from <http://doi.wiley.com/10.1002/jid.1772>
- Dodman, D., & Satterthwaite, D. (2009). Institutional Capacity, Climate Change Adaptation and the Urban Poor. *IDS Bulletin*, 39(4), pp. 67–74. Retrieved from <http://doi.wiley.com/10.1111/j.1759-5436.2008.tb00478.x>
- Ensor, J., & Berger, R. (2009). Community-Based Adaptation and Culture in Theory and Practice, in: W. N. Adger, I. Lorenzoni, & K. O'Brien (Eds.), *Adaptation to Climate Change: Thresholds, Values, Governance*, pp. 227–239. Cambridge and New York: Cambridge University Press.
- Ensor, J., & Harvey, B. (2015). Social learning and climate change adaptation: evidence for

- international development practice. *Wiley Interdisciplinary Reviews: Climate Change*, 6(5), pp. 509–522. Retrieved from <http://doi.wiley.com/10.1002/wcc.348>
- Few, R., Brown, K., & Tompkins, E. L. (2007). Public participation and climate change adaptation: avoiding the illusion of inclusion. *Climate Policy*, 7(1), pp. 46–59. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/14693062.2007.9685637>
- Fisher, S. (2012). Policy storylines in Indian climate politics: opening new political spaces? *Environment and Planning C: Government and Policy*, 30(1), pp. 109–127. Retrieved from <http://epc.sagepub.com/lookup/doi/10.1068/c10186>
- Forsyth, T. (2013). Community-based adaptation: A review of past and future challenges. *Wiley Interdisciplinary Reviews: Climate Change*, 4, pp. 439–446. Retrieved from <http://doi.wiley.com/10.1002/wcc.231>
- Friend, R., & Moench, M. (2013). What is the purpose of urban climate resilience? Implications for addressing poverty and vulnerability. *Urban Climate*, 6, pp. 98–113. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S2212095513000394>
- Fung, A. (2006). Varieties of Participation in Complex Governance. *Public Administration Review*, 66(s1), pp. 66–75. Retrieved from <http://doi.wiley.com/10.1111/j.1540-6210.2006.00667.x>
- Fung, A., & Wright, E. O. (2003). *Deepening Democracy: Institutional Innovations in Empowered Participatory Governance*. London and New York: Verso.
- González, S., & Healey, P. (2005). A Sociological Institutional Approach to the Study of Innovation in Governance Capacity. *Urban Studies*, 42(11), pp. 2055–2069. Retrieved from <http://usj.sagepub.com/content/42/11/2055.short>
- Government of India. (2013). *Twelfth Five Year Plan 2012-2017*. New Delhi, India: Planning Commission, Government of India.
- Gupta, H. K., Gupta, K., Singh, P., & Sharma, R. C. (2006). A Sustainable development and environmental quality management strategy for Indore. *Environmental Quality Management*, 15(4), pp. 57–68. Retrieved from <http://doi.wiley.com/10.1002/tqem.20102>
- Harvey, D. (2003). The right to the city. *International Journal of Urban and Regional Research*, 27(4), pp. 939–941. Retrieved from <http://doi.wiley.com/10.1111/j.0309-1317.2003.00492.x>
- Healey, P. (2004). Creativity and urban governance. *Policy Studies*, 25(2), pp. 87–102. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/0144287042000262189>
- Himley, M. (2008). Geographies of Environmental Governance: The Nexus of Nature and Neoliberalism. *Geography Compass*, 2(2), pp. 433–451. Retrieved from

- <http://doi.wiley.com/10.1111/j.1749-8198.2008.00094.x>
- Hughes, S. (2013). Justice in Urban Climate Change Adaptation: Criteria and Application to Delhi. *Ecology and Society*, 18(4), p. 48. Retrieved from <http://www.ecologyandsociety.org/vol18/iss4/art48/>
- Hughes, S., & Romero-Lankao, P. (2014). Science and institution building in urban climate-change policymaking. *Environmental Politics*, 23(6), pp. 1023–1042. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/09644016.2014.921459>
- Hunt, A., & Watkiss, P. (2011). Climate change impacts and adaptation in cities: A review of the literature. *Climatic Change*, 104(1), pp. 13–49. Retrieved from <http://www.springerlink.com/index/10.1007/s10584-010-9975-6>
- Huq, S., & Reid, H. (2004). Mainstreaming Adaptation in Development. *IDS Bulletin*, 35(3), pp. 15–21. Retrieved from <http://doi.wiley.com/10.1111/j.1759-5436.2004.tb00129.x>
- Indore City Resilience Strategy. (2012). *Indore City Resilience Strategy for Changing Climate Scenarios* (G. K. Bhat, V. P. Kulshreshtha, U. A. Bhonde, U. Rajasekar, A. K. Karanth, & M. K. Burvey, Eds.). Indore, India: TARU Leading Edge.
- Innes, J. E., & Booher, D. E. (2010). *Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy*. New York: Routledge.
- IPCC. (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, et al., Eds.). Cambridge and New York: Cambridge University Press.
- Jamison, A. (2010). Climate change knowledge and social movement theory. *Wiley Interdisciplinary Reviews: Climate Change*, 1(6), pp. 811–823. Retrieved from <http://doi.wiley.com/10.1002/wcc.88>
- Karanth, A., & Archer, D. (2014). Institutionalising mechanisms for building urban climate resilience: experiences from India. *Development in Practice*, 24(4), pp. 514–526. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/09614524.2014.911246>
- Kellert, S. R., Mehta, J. N., Ebbin, S. A., & Lichtenfeld, L. L. (2000). Community Natural Resource Management: Promise, Rhetoric, and Reality. *Society & Natural Resources*, 13(8), pp. 705–715. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/089419200750035575>
- Lane, M. B., & Corbett, T. (2005). The Tyranny of localism: Indigenous participation in community-based environmental management. *Journal of Environmental Policy & Planning*, 7(2), pp. 141–159. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/15239080500338671>

- Magee, T. (2013). *A Field Guide to Community Based Adaptation*. London and New York: Routledge.
- Marcuse, P. (2009). From critical urban theory to the right to the city. *City*, 13(2–3), pp. 185–197. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/13604810902982177>
- McFarlane, C. (2012). The Entrepreneurial Slum: Civil Society, Mobility and the Co-production of Urban Development. *Urban Studies*, 49(13), pp. 2795–2816. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1177/0042098012452460>
- Meerow, S., & Newell, J. P. (2016). Urban resilience for whom, what, when, where, and why? *Urban Geography*, pp. 1–21. Retrieved from <http://www.tandfonline.com/doi/full/10.1080/02723638.2016.1206395>
- Migdal, J. S. (2001). *State in Society: Studying How States and Societies Transform and Constitute One Another*. Cambridge, UK: Cambridge University Press.
- Mitlin, D. (2008). With and beyond the state -- co-production as a route to political influence, power and transformation for grassroots organizations. *Environment and Urbanization*, 20(2), pp. 339–360. Retrieved from <http://eau.sagepub.com/cgi/doi/10.1177/0956247808096117>
- Moore, M., & Hartley, J. (2008). Innovations in governance. *Public Management Review*, 10(1), pp. 3–20. Retrieved from <http://dx.doi.org/10.1080/14719030701763161>
- Moser, S. C., & Ekstrom, J. A. (2011). Taking ownership of climate change: participatory adaptation planning in two local case studies from California. *Journal of Environmental Studies and Sciences*, 1(1), pp. 63–74. Retrieved from <http://www.springerlink.com/index/10.1007/s13412-011-0012-5>
- Nay, J. J., Abkowitz, M., Chu, E., Gallagher, D., & Wright, H. (2014). A review of decision-support models for adaptation to climate change in the context of development. *Climate and Development*, 6(4), pp. 357–367. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17565529.2014.912196>
- O'Brien, K. L. (2011). Global environmental change II: From adaptation to deliberate transformation. *Progress in Human Geography*, 36(5), pp. 667–676. Retrieved from <http://phg.sagepub.com/cgi/doi/10.1177/0309132511425767>
- Paavola, J., & Adger, W. N. (2006). Fair adaptation to climate change. *Ecological Economics*, 56(4), pp. 594–609. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0921800905001187>
- Pahl-Wostl, C., Gupta, J., & Petry, D. (2008). Governance and the Global Water System: A Theoretical Exploration. *Global Governance*, 14(4), pp. 419–435. Retrieved from <http://www.atypon-link.com/LRP/doi/abs/10.5555/ggov.2008.14.4.419>

- Parks, B. C., & Roberts, J. T. (2010). Climate Change, Social Theory and Justice. *Theory, Culture & Society*, 27(2–3), pp. 134–166. Retrieved from <http://tcs.sagepub.com/cgi/doi/10.1177/0263276409359018>
- Pasquini, L., Ziervogel, G., Cowling, R. M., & Shearing, C. (2015). What enables local governments to mainstream climate change adaptation? Lessons learned from two municipal case studies in the Western Cape, South Africa. *Climate and Development*, 7(1), pp. 60–70. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17565529.2014.886994>
- Pelling, M., & High, C. (2005). Understanding adaptation: What can social capital offer assessments of adaptive capacity? *Global Environmental Change*, 15(4), pp. 308–319. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0959378005000154>
- Pelling, M., O'Brien, K., & Matyas, D. (2015). Adaptation and transformation. *Climatic Change*, 133(1), pp. 113–127. Retrieved from <http://link.springer.com/10.1007/s10584-014-1303-0>
- Della Porta, D., & Diani, M. (1999). *Social Movements: An Introduction*. Malden, MA and Oxford, UK: Blackwell Publishing.
- Reid, H., & Huq, S. (2014). Mainstreaming community-based adaptation into national and local planning. *Climate and Development*, 6(4), pp. 291–292. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/17565529.2014.973720>
- Robinson, J. (2011). Cities in a World of Cities: The Comparative Gesture. *International Journal of Urban and Regional Research*, 35(1), pp. 1–23. Retrieved from <http://doi.wiley.com/10.1111/j.1468-2427.2010.00982.x>
- Rodima-Taylor, D., Olwig, M. F., & Chhetri, N. (2012). Adaptation as innovation, innovation as adaptation: An institutional approach to climate change. *Applied Geography*, 33, pp. 107–111. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0143622811001883>
- Roggema, R., Vermeend, T., & Dobbelsteen, A. (2012). Incremental Change, Transition or Transformation? Optimising Change Pathways for Climate Adaptation in Spatial Planning. *Sustainability*, 4(12), pp. 2525–2549. Retrieved from <http://www.mdpi.com/2071-1050/4/10/2525/>
- Rosenzweig, C., Solecki, W., Hammer, S. A., & Mehrotra, S. (2010). Cities lead the way in climate-change action. *Nature*, 467(7318), pp. 909–911. Retrieved from <http://www.nature.com/doi/10.1038/467909a>
- Roy, A. (2011). Urbanisms, worlding practices and the theory of planning. *Planning Theory*, 10(1), pp. 6–15. Retrieved from <http://plt.sagepub.com/cgi/doi/10.1177/1473095210386065>
- Sharma, D., & Tomar, S. (2010). Mainstreaming climate change adaptation in Indian cities.

- Environment and Urbanization*, 22(2), pp. 451–465. Retrieved from <http://eau.sagepub.com/cgi/doi/10.1177/0956247810377390>
- Shi, L., Chu, E., Anguelovski, I., Aylett, A., Debats, J., Goh, K., et al. (2016). Roadmap towards justice in urban climate adaptation research. *Nature Climate Change*, 6(2), pp. 131–137. Retrieved from <http://www.nature.com/doi/10.1038/nclimate2841>
- Shi, L., Chu, E., & Carmin, J. (2016). Global Patterns of Adaptation Planning: Results from a Global Survey, in: K. C. Seto, W. D. Solecki, & C. A. Griffith (Eds.), *The Routledge Handbook of Urbanization and Global Environmental Change*, pp. 336–349. Routledge.
- Sovacool, B. K., Linnér, B.-O., & Goodsite, M. E. (2015). The political economy of climate adaptation. *Nature Climate Change*, 5(7), pp. 616–618. Retrieved from <http://www.nature.com/doi/10.1038/nclimate2665>
- Swyngedouw, E. (2004). Globalisation or “glocalisation”? Networks, territories and rescaling. *Cambridge Review of International Affairs*, 17(1), pp. 25–48. Retrieved from <http://www.tandfonline.com/doi/10.1080/0955757042000203632>
- Swyngedouw, E. (2005). Governance innovation and the citizen: The Janus face of governance-beyond-the-state. *Urban Studies*, 42(11), pp. 1991–2006. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1080/00420980500279869>
- Taylor, M. (2007). Community Participation in the Real World: Opportunities and Pitfalls in New Governance Spaces. *Urban Studies*, 44(2), pp. 297–317. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1080/00420980601074987>
- Thaker, J., & Leiserowitz, A. (2014). Shifting discourses of climate change in India. *Climatic Change*, 123(2), pp. 107–119. Retrieved from <http://link.springer.com/10.1007/s10584-014-1059-6>
- UN-Habitat. (2006). *Water Demand Management Strategy and Implementation Plan for Indore*. United Nations Human Settlements Programme (UN-Habitat).
- Verma, G. D. (2000). Indore’s Habitat Improvement Project: success or failure? *Habitat International*, 24(1), pp. 91–117. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0197397599000314>
- Watson, V. (2009). Seeing from the South: Refocusing Urban Planning on the Globe’s Central Urban Issues. *Urban Studies*, 46(11), pp. 2259–2275. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1177/0042098009342598>
- While, A., & Whitehead, M. (2013). Cities, Urbanisation and Climate Change. *Urban Studies*, 50(7), pp. 1325–1331. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1177/0042098013480963>

Whitehead, M. (2013). Neoliberal Urban Environmentalism and the Adaptive City: Towards a Critical Urban Theory and Climate Change. *Urban Studies*, 50(7), pp. 1348–1367. Retrieved from <http://usj.sagepub.com/cgi/doi/10.1177/0042098013480965>

Ziervogel, G., Cowen, A., & Ziniades, J. (2016). Moving from Adaptive to Transformative Capacity: Building Foundations for Inclusive, Thriving, and Regenerative Urban Settlements. *Sustainability*, 8(9), p. 955. Retrieved from <http://www.mdpi.com/2071-1050/8/9/955>